

We claim:

- 575        1. A large optically switched communication network comprising:
- (A) a plurality of more than 20 area code nodes;
  - (B) a network of optical fibers;
  - (C) a plurality dense wavelength division multiplexing components for providing at least 100 wavelength communication channels through each optical fiber in said network of optical fibers;
- 580        (D) a plurality of processor controlled optical switches located at each of said area code nodes;
- 585        (E) a plurality of processors, said plurality of processors being programmed with a routing algorithm for controlling said optical switches to permit a plurality of single wavelength communication links through said network of optical fibers from each of said plurality of area code nodes to every other one of said area code nodes;
- 590        (F) optical signal generator for generating a plurality of reference wavelength signals for use at each of the area code nodes.
- wherein each communication link from one area code node to another area code node within the network routed without a change in wavelength and without optical-electrical optical conversion..
- 595        2. The network as in Claim 1 wherein said at least 100 wavelength communication channels is at least 300 wavelength communication channels.
- 600        3. A nation scale high bandwidth circuit-switched communication network comprising:
  - (A) a fiber optic network comprising a large number of optical fibers;
  - (B) at least one reference optical signal generator to provide a plurality of optical carrier frequencies and sub-frequencies;
  - (C) a plurality of modulators to modulate user signals onto said optical sub-frequencies;

- 605                             (D) a plurality of passive optical connectors to combine said user signals carried  
                                   by a number of optical fibers into a smaller number of optical fibers onto a  
                                   smaller number of optical fibers;
- 610                             (E) a plurality of all optical switches to route DWDM channels carried on said  
                                   fibers from source area codes to destination area codes;
- (F) and plurality of demodulators to demodulate user signals from said optical  
                                   sub-frequencies;
- wherein no optical wavelength conversion is necessary in routing all source signals to all  
                                   destinations.